## Exponent, Inc.
## James R. (Bob) Bailey, Ph.D., P.E., F. ASCE

Exponent, Inc. is an engineering and scientific consulting firm comprised of a multidisciplinary team of scientists, physicians, engineers, and regulatory consultants who perform in-depth scientific research and analysis. Exponent, Inc. designated Dr. James R. (Bob) Bailey as their representative on the panel. Dr. Bailey obtained his undergraduate, masters, and Ph.D. degrees from Texas Tech University in Civil Engineering, and is currently a licensed Professional Engineer and Fellow of the American Society of Civil Engineers (ASCE). Dr. Bailey served as Chairman of the Task Committee for Wind Load Design for Petrochemical Facilities under the direction of ASCE. The committee was formed in June 2005 and comprised of 19 professionals from industry and academia. The committee concluded its work in December 2010, and their efforts resulted in the ASCE publication *Wind Loads for Petrochemical and Other Industrial Facilities.* For the past 30 years, Dr. Bailey has served as a technical consultant for private industry, universities, and government. As Senior Managing Engineer in the Building & Structures practice of Exponent, Inc., Dr. Bailey brings specialized expertise to areas related to wind engineering, construction materials, and structural analysis and design. His primary area of expertise is determining the risk exposure of residential, commercial, and industrial properties to hazards associated with hurricanes, tornadoes, and flooding. He has conducted numerous field surveys to document storm damage in the aftermath of hurricanes and tornadoes that have occurred throughout the United States.

Dr. Bailey has been selected as the Presiding Officer of the panel.

## Texas Tech University
## Douglas A. Smith, Ph.D., P.E., F. ASCE

Texas Tech University (TTU) created the National Wind Institute to conduct interdisciplinary research in the areas of wind energy, wind hazard mitigation, wind-induced damage, severe storms, and wind-related economics. TTU designated Dr. Douglas A. Smith as their representative to serve on the panel. Dr. Smith received his undergraduate, masters, and Ph.D. degrees from Texas Tech in Civil Engineering. Dr. Smith's combination of experience and background in the areas of structural and wind engineering, bluff body aerodynamics, and statistical analyses has enabled him to address wind engineering problems from a unique perspective. As an associate professor at Texas Tech University, his research has focused principally on full scale testing for wind loads at TTU's Wind Science and Engineering field facility. Dr. Smith served on the board for the American Association of Wind Engineering and is currently a member of the ASCE 7 Wind Load Task Committee, which establishes design wind loads for buildings and other structures. He has personally conducted windstorm-induced damage documentation for the Institute for Disaster Research and for the Wind Science and Engineering Programs at TTU. He developed an analytical procedure to predict wind damage to buildings and an expert system to grade buildings for their wind resistance for the Insurance Institute for Property Loss Reduction. In addition, Dr. Smith developed software to evaluate evacuation shelters for wind resistance for Georgia Emergency Management Agency. As a wind load expert, he has assisted in developing load factors for combined wind and surge loads that were incorporated into the ASCE 7 Standard. His expertise in wind effects on structures has resulted in the Texas Windstorm Insurance Association using his damage prediction

methodology to establish the cause of total destruction of more than 2,000 houses on the Bolivar Peninsula during Hurricane Ike, and the amount of wind damage the structures most likely would have sustained during the hurricane had they survived.

## William (Bill) Coulbourne, P.E., M. ASCE

Mr. William (Bill) Coulbourne has over 40 years of engineering, construction, and consulting experience. Mr. Coulbourne received his undergraduate degree in Civil Engineering from Virginia Tech and a master's degree in Structural Engineering from the University of Virginia. His expertise includes building design, methods, materials, and codes, and he is experienced in hazard-related design and construction of wind- and hurricane-resistant structures. Mr. Coulbourne has spent nearly 20 years finding solutions to structural engineering problems caused by natural hazards. As part of that practice, he managed teams that have investigated every major hurricane and flood disaster that occurred in the United States and its territories since 1995. Mr. Coulbourne has investigated failures and mitigation design techniques for thousands of buildings including residential structures, schools used as shelters, hospitals, and other critical facilities. He was the primary author and Project Manager for FEMA 55: *Coastal Construction Manual*, FEMA 320: *Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business*, and FEMA 361: *Design and Construction Guidance for Community Shelters*. He has co-authored books and journal articles on high wind design issues and strategies. Mr. Coulbourne has written articles for journals and given presentations and webinars on high wind and flood design and coastal construction issues. He taught as an adjunct faculty member in the College of Engineering at the University of Delaware. He actively participates in developing engineering standards for wind design by membership on the ASCE 7 *Minimum Design Loads for Buildings and Other Structures* Wind Load Task Committee and the National Council of Structural Engineers Wind Load Committee. He also participates on the ASCE 24 *Flood Resistant Design and Construction* standard. In addition, Mr. Coulbourne is the part-time Director of Wind and Flood Hazard Mitigation for the Applied Technology Council, which is a non-profit organization whose mission is to bring research on natural hazards to the practicing structural engineer. Mr. Coulbourne will provide technical leadership for URS Corp. in assisting FEMA with the development of the formula required by the 2012 COASTAL Act. The COASTAL Formula is intended to establish an allocation of losses between the National Flood Insurance Program and wind insurers when property damage cannot be determined due to wind or water.

## Andrew Kennedy, Ph.D., M. ASCE

Dr. Andrew Kennedy has worked in Coastal Science and Engineering for the past two decades specializing in waves, surge, and their effects on human activities. Dr. Kennedy obtained his undergraduate degree from Queen's University, Canada and his masters degree from the University of British Columbia, both in the Civil Engineering field. Dr. Kennedy attended Monash University, Australia for his Ph.D. in Mechanical Engineering. Prior to Notre Dame, he held positions at the Center for Applied Coastal Research at the University of Delaware and the University of Florida. Parts of his work is observational, ranging from the rapid deployment of wave and surge gauges in advance of hurricane landfalls to the analysis of very large-scale bathymetric lidar datasets to determine morphological changes during large storms. A recent focus correlates observed storm damage to observed and predicted hydrodynamics in coastal regions. Parts of Professor Kennedy's research are theoretical and computational, and deal with

water wave theory in shallow and deep water, and in the generation of near-shore circulation by breaking waves. This work has direct application to the prediction of storm waves and water levels, damage, and erosion. Dr. Kennedy has performed numerous numerical and field investigations of waves, surge and their effects on residential structures, most notably for Hurricane Ike in Texas where he linked waves, surge, and building performance. He is on the board of directors for the Applied Technology Council, the editorial Board for the ASCE Journal of Waterway, Port, Coastal, and Ocean Engineering, the Working Group for Disaster Impact Assessments and Plans, the Joint Action Group for the COASTAL Act Post-Storm Analysis, and has authored nearly 40 referred journal publications.

## Forte & Tablada, Inc.
## Samuel Amoroso, Ph.D., P.E., S.E., M. ASCE

Forte & Tablada is a consulting engineering and land surveying firm specializing in civil, environmental, electrical, and mechanical engineering and land surveying. The firm consulted with an architectural firm planning the rebuild of Galveston Island State Park after Hurricane Ike. Forte & Tablada investigated the wind and flood hazards for the location and recommended design approaches to minimize future storm damage for the types of structures that would likely be built there. Forte & Tablada designated Dr. Sam Amoroso as their representative on the panel. Dr. Amoroso is a licensed professional engineer in the states of Louisiana, Mississippi, Texas, and Florida with many years of combined professional and academic experience. Upon graduating with a degree in civil engineering from Louisiana State University (LSU), he worked as a civil and structural engineer in Texas. In 2003, he returned to Louisiana to pursue a Ph.D. in wind effects on structures with the LSU Civil and Environmental Engineering Department and the LSU Hurricane Center. His dissertation research focused on the topic of wind loads for petrochemical structures. Dr. Amoroso's professional experience includes structural engineering, wind load consulting, wind tunnel testing, hurricane risk consulting, and the investigation of structural damage caused by hurricanes. In addition, he has several years of experience in the design of heavy civil infrastructure. He is currently an adjunct instructor in the Civil and Environmental Engineering Department at LSU. Dr. Amoroso has contributed to technical conferences on the subjects of wind engineering and structural engineering. He is an active member of the American Society of Civil Engineers' Task Committee on Wind Induced Forces and a member of both the American Society of Civil Engineers and the American Association for Wind Engineers.